

# Partition size based selection for motion vector compression

**JCTVC-E096**

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## 1. Overview

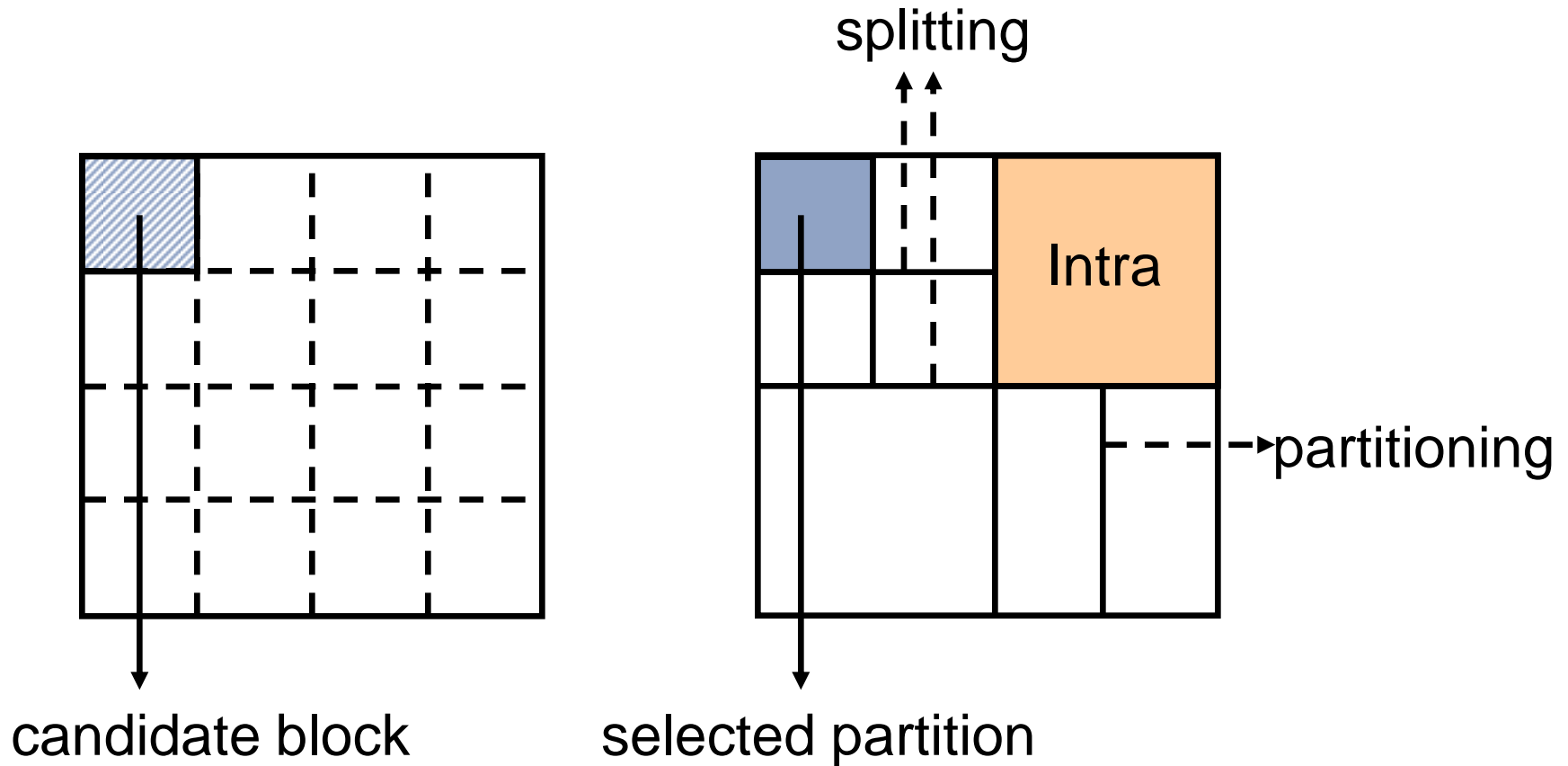
# Overview

- Proposed technique
  - Partition size based selection for motion vector compression  
crosschecked by Sharp (JCTVC-E308)
- Algorithm
  - Largest partition size selected as stored motion vector
- Software
  - HM2.0 based
- Simulation results
  - Overall BD-rate gain 0.1%-0.2%
  - Overall BD-rate gain 0.6% (combination with other techniques)
  - Same complexity as the anchor (both encoder and decoder)

A large, light blue, stylized number '2' is positioned on the left side of the slide, serving as a background element for the section header.

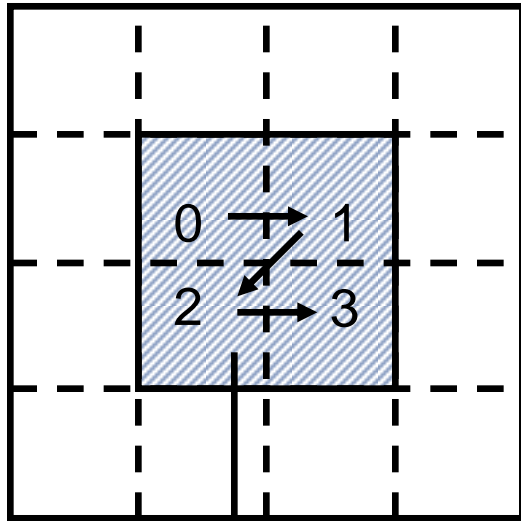
## **2. Algorithm**

## Current algorithm (HM2.0)

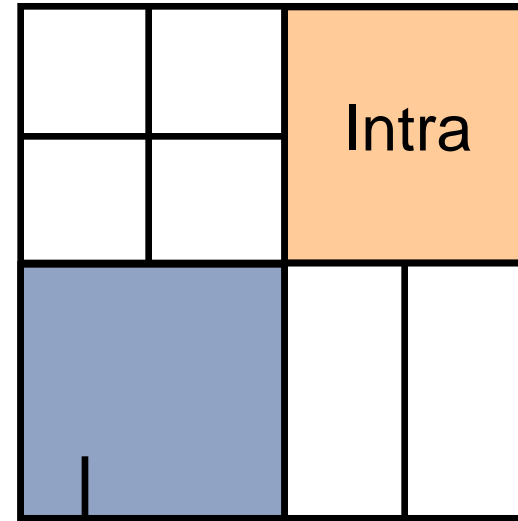


Selected partition is “always top-left”

# Proposed algorithm



candidate blocks



selected partition

Selected partition is the largest “inter” partition

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# **3. Experiments**

# Simulation results

- BD-rate **gain 0.1% for high efficiency 0.2% for low complexity**
- **Same complexity** as the anchor (both encoder and decoder)

|             | Random access |           |           | Random access LoCo |           |           |
|-------------|---------------|-----------|-----------|--------------------|-----------|-----------|
|             | Y BD-rate     | U BD-rate | V BD-rate | Y BD-rate          | U BD-rate | V BD-rate |
| Class A     | 0.0           | -0.2      | -0.1      | -0.1               | -0.2      | -0.2      |
| Class B     | -0.1          | 0.0       | -0.1      | -0.1               | 0.0       | -0.1      |
| Class C     | -0.2          | -0.2      | -0.2      | -0.2               | -0.1      | -0.2      |
| Class D     | -0.3          | -0.2      | -0.3      | -0.3               | -0.3      | -0.3      |
| Class E     |               |           |           |                    |           |           |
| All         | <b>-0.1</b>   | -0.1      | -0.1      | <b>-0.2</b>        | -0.2      | -0.2      |
| Enc Time[%] | 100%          |           |           | 101%               |           |           |
| Dec Time[%] | 99%           |           |           | 100%               |           |           |

|             | Low delay   |           |           | Low delay LoCo |           |           |
|-------------|-------------|-----------|-----------|----------------|-----------|-----------|
|             | Y BD-rate   | U BD-rate | V BD-rate | Y BD-rate      | U BD-rate | V BD-rate |
| Class A     |             |           |           |                |           |           |
| Class B     | -0.1        | 0.1       | 0.1       | -0.1           | -0.1      | 0.2       |
| Class C     | -0.2        | 0.1       | -0.1      | -0.3           | -0.3      | -0.5      |
| Class D     | -0.3        | -0.3      | -0.6      | -0.2           | -0.4      | -0.2      |
| Class E     | 0.0         | -0.2      | -0.1      | -0.1           | -0.3      | -0.1      |
| All         | <b>-0.1</b> | -0.1      | -0.2      | <b>-0.2</b>    | -0.2      | -0.1      |
| Enc Time[%] | 100%        |           |           | 101%           |           |           |
| Dec Time[%] | 100%        |           |           | 101%           |           |           |



# Simulation results (**combination results**)

1. Latest partition preference      2. Reference index compression

Overall BD-rate **gain 0.6%**

|             | Random access |           |           | Random access LoCo |           |           |
|-------------|---------------|-----------|-----------|--------------------|-----------|-----------|
|             | Y BD-rate     | U BD-rate | V BD-rate | Y BD-rate          | U BD-rate | V BD-rate |
| Class A     | -0.4          | -0.3      | -0.7      | -0.5               | -0.6      | -0.4      |
| Class B     | -0.4          | -0.2      | -0.2      | -0.3               | -0.3      | -0.2      |
| Class C     | -0.6          | -0.5      | -0.6      | -0.6               | -0.5      | -0.5      |
| Class D     | -0.8          | -0.7      | -0.7      | -0.9               | -0.8      | -0.8      |
| Class E     |               |           |           |                    |           |           |
| All         | <b>-0.5</b>   | -0.4      | -0.5      | <b>-0.5</b>        | -0.5      | -0.5      |
| Enc Time[%] | 100%          |           |           | 102%               |           |           |
| Dec Time[%] | 102%          |           |           | 101%               |           |           |

|             | Low delay   |           |           | Low delay LoCo |           |           |
|-------------|-------------|-----------|-----------|----------------|-----------|-----------|
|             | Y BD-rate   | U BD-rate | V BD-rate | Y BD-rate      | U BD-rate | V BD-rate |
| Class A     |             |           |           |                |           |           |
| Class B     | -0.4        | -0.4      | -0.3      | -0.5           | -0.4      | -0.2      |
| Class C     | -0.7        | -0.7      | -0.6      | -0.9           | -0.8      | -1.0      |
| Class D     | -0.8        | -0.9      | -0.9      | -0.8           | -0.6      | -0.6      |
| Class E     | -0.8        | -0.5      | -0.3      | -0.6           | -0.6      | -0.5      |
| All         | <b>-0.7</b> | -0.6      | -0.5      | <b>-0.7</b>    | -0.6      | -0.6      |
| Enc Time[%] | 100%        |           |           | 101%           |           |           |
| Dec Time[%] | 102%        |           |           | 103%           |           |           |

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## 4. Conclusion

# Conclusion

- Proposed technique
  - Partition size based selection for motion vector compression
- Simulation results
  - Overall BD-rate gain 0.1%-0.2%
  - Overall BD-rate gain 0.6% (combination with other techniques)
  - Same complexity as the anchor (both encoder and decoder)
- Suggestion
  - Partition size based selection be considered for selecting motion vector compression algorithm

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**HOLDINGS**

The logo graphic consists of two parallel, curved, grey swooshes that originate from the right side of the word 'HOLDINGS' and extend towards the right edge of the frame.